

What is claimed is:

1. A multi-cycle path analyzing method making
an analysis of a multi-cycle path which can take two
5 cycles or more for a signal to propagate from a starting
point of the path to its end point among paths within
a circuit to be analyzed, comprising:

making an analysis of a circuit to be analyzed in
correspondence with a name of each element which includes
10 a cell configuring the circuit to be analyzed, and/or
a meaning and/or a relationship of a signal to a terminal
of each element; and

making a multi-cycle path determination of whether
or not a path from a starting point to an end point is
15 a multi-cycle path by using a result of the analysis.

2. The multi-cycle path analyzing method
according to claim 1, wherein:

in the analysis of the circuit to be analyzed,
20 circuit conversion for a multi-cycle path analysis in
correspondence with the meaning of the signal to the
terminal of each element is performed; and

the multi-cycle path determination is made by using
a result of the circuit conversion.

3. The multi-cycle path analyzing method according to claim 2, wherein

in the circuit conversion, circuit conversion such that a signal which can be converted into an enable signal
5 to memory elements at the starting point and the end point of the path among signals to the terminal of the element is performed.

4. The multi-cycle path analyzing method
10 according to claim 3, wherein

in the multi-cycle path determination, multi-cycle path determination is made depending on whether or not a value of a memory element can possibly change based on a value of the enable signal to the memory
15 elements at the starting point and the end point of the path.

5. The multi-cycle path analyzing method according to claim 4, wherein

20 in the multi-cycle path determination made based on the value of the enable signal, if all of paths between the starting point and the end point of the path are inactive for a path which is determined not to be a multi-cycle path, the path is determined to be a
25 multi-cycle path.

6. The multi-cycle path analyzing method according to claim 3, wherein

in the circuit conversion, circuit conversion such
5 that a selection control signal to a selector which controls a setting of a value in the memory element at the starting point and/or the end point is converted into the enable signal is performed.

10 7. The multi-cycle path analyzing method according to claim 3, wherein

in the circuit conversion, if a source of a clock which drives the memory element at the starting point and/or the end point is also a memory element, circuit
15 conversion such that an enable signal for the memory element of the clock source is converted into the enable signal for the memory element at the starting point and/or the end point is performed.

20 8. The multi-cycle path analyzing method according to claim 3, wherein

in the circuit conversion, circuit conversion such that a clock which drives the memory elements is converted into the enable signal by using clock gating information
25 of a clock which drives the memory elements at the starting

point and the end point of the path is performed.

9. The multi-cycle path analyzing method, wherein:

5 in the analysis of the circuit to be analyzed, memory elements within the circuit are classified into groups by the name of each element;
a reachable state of a finite state machine represented by each of the groups is calculated; and
10 the multi-cycle path determination is made by using a result of the calculation.

10. The multi-cycle path analyzing method according to claim 1, wherein

15 in the analysis of the circuit to be analyzed, a restriction circuit corresponding to a condition is added to the circuit to be analyzed based on the condition for a relationship between a value setting signal for an external input terminal of the circuit and a value
20 read signal from an external output terminal; and
the multi-cycle path determination is made for the circuit to be analyzed after the addition.

11. The multi-cycle path analyzing method
25 according to claim 1, wherein

a multi-cycle path restriction which straddles a memory element and can move is detected by making the multi-cycle path analysis for a path which straddles the memory element.

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12. The multi-cycle path analyzing method according to claim 1, wherein:

in the analysis of the circuit to be analyzed, information required for circuit conversion for the multi-cycle path analysis is stored in correspondence with the meaning of the signal to the terminal of each element which includes a cell configuring the circuit; and

the multi-cycle path determination is made by using stored contents.

13. A multi-cycle path analyzing apparatus making an analysis of a multi-cycle path which can take two cycles or more for a signal to propagate from a starting point of the path to its end point among paths within a circuit to be analyzed, comprising:

a circuit converting unit performing circuit conversion for making a multi-cycle path analysis in correspondence with a meaning of a signal to a terminal of each element which includes a cell configuring the

circuit; and

a multi-cycle path determining unit making a determination of a path from a starting point to an end point is a multi-cycle path by using a result of the
5 circuit conversion.

14. The multi-cycle path analyzing apparatus according to claim 13, wherein

said circuit converting unit performs circuit
10 conversion such that a signal which can be converted into an enable signal for memory elements at the starting point and the end point of the path among signals for the terminal of the element into the enable signal.

15 15. A program, which is used by a computer making an analysis of a multi-cycle path which can take two cycles or more for a signal to propagate from a starting of the path to its end point among paths within a circuit to be analyzed, for causing the computer to execute a
20 process, the process comprising:

performing circuit conversion for making an analysis of a multi-cycle path in correspondence with a meaning of a signal to a terminal of each element which includes a cell configuring the circuit; and

25 making a determination of whether or not a path

from a starting point to an end point is a multi-cycle path by using a result of the circuit conversion.

16. A multi-cycle path analyzing apparatus
5 making an analysis of a multi-cycle path which can take two cycles or more for a signal to propagate from a starting point of the path to its end point among paths within a circuit to be analyzed, comprising:

circuit converting means for performing circuit
10 conversion for making a multi-cycle path analysis in correspondence with a meaning of a signal to a terminal of each element which includes a cell configuring the circuit; and

multi-cycle path determining means for making a
15 determination of a path from a starting point to an end point is a multi-cycle path by using a result of the circuit conversion.